

OSO 1

PROTONS, ELECTRONS, CLEAN TAPES

62-006A-11B

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY THERE WERE FOUR 7-TRACK, 556 BPI TAPES WRITTEN IN BCD. THERE IS ONE RESTORED TAPE WRITTEN IN EBCDIC. THE TAPES WERE CREATED ON AN IBM 360 COMPUTER. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6250 BPI. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND THE TIME SPANS ARE AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR02969	DS02969	D02558	1-225	03/07/62 - 03/25/62
		D02559	226-450	03/25/62 - 04/14/62
		D02560	451-671	04/14/62 - 05/05/62
		D02561 *	672-805	05/05/62 - 07/08/62

* THIS TAPE SHOWED THAT IT CONTAINED 136 FILES, BUT IT HAD 2 FILES WITH 0 RECORDS.

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62-006A-11B

LAWRENCE RADIATION LABORATORY
P. O. BOX 808
LIVERMORE, CALIFORNIA 94550

September 19, 1968

Mr. Leo Davis
Code 601
Goddard Space Flight Center
Greenbelt, Maryland

Dear Mr. Davis:

We have recently finished sorting, categorizing, and organizing a significant portion of Dr. Carl Schrader's data obtained on channel six (6) from the OSO-1 (S-16) satellite launched in March of 1962.

A few weeks ago, I mentioned to you by telephone that we would make four digital magnetic tapes (containing approximately 820 orbits) available to you upon completion of this task.

Initially, we received the channel six information in very badly scattered form on eleven computer tapes from the Goddard Data Center in 1967. These tapes were produced from some 3 million (80 character) card images. Accompanying these tapes was a letter describing the maglignant condition of the tapes and prognostication as to the difficulties expected in separating the desired data and from that time only part-time effort has been devoted to finalizing a format which we have at present and believe to be satisfactory.

A printout of a full orbit of data from one of the tapes is enclosed. All information for a given orbit is packed into a single tape file. There is a variable number of records per file--usually 11 to 14. There are approximately 225 files on each of the 1st three tapes and a somewhat fewer numbers on the fourth tape. The end of all valid data on a tape is signified by 2 end of file marks. Each (BCD) record contains 3200 characters. One record is printed on each page of the enclosed printout. The first two leftmost digits running vertically down each page is what we have called "sort numbers" being that they identify a distinct type of data on that same (80 character) card image.

A complete list of the variety of sort numbers are 48, 17, 18, 19, 20, 27, 28, 29, 30, 31, 32, 4, 24, 25, 26, in the order of their appearance in a file. Our sort-merge operations were performed in a manner such that none of the original information correlated with each of the sort numbers was deleted.

There is no uniform number of card images of a given sort number because many were missing from the original tapes. For this same reason, Universal start and stop times for a given orbit may not appear on sort number 48 card images. Additionally, as seen in Table IV, 233 orbits are missing.

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For a more comprehensive report of the parameters measured in the OSO-1 experiment, reference should be made to a Martin Company document entitled, "S-16 Satellite Data Program Plan", 2/19/62. Following are several tables which can be used to decode the channel 6 data. I have also included a sample program from which a programmer might decipher formats we used in reading the tapes. Direct any pertinent questions either to myself or to Dr. Jim Waggoner.

Sincerely,

Richard Knox
L-330

(415) 447-1100 X-7201

RN:jar

OCT 8 1962
#2408

TABLE I

LEGEND FOR DATA

F-FAMILY NO. (SEE NEXT PAGE)
 E-ELECTRON COUNT RATE
 P-PROTON COUNT RATE

B MAGNETIC
 L-SHELL NO.

SORT NO.	D-DAY N-NITE	
4	---	TIME/ALTITUDE/LATITUDE/LONGITUDE/DATE/ORBIT/
17	D	LOG (E (AVERAGE))/ TIME/DATE/ORBIT/
18	N	LOG (E (AVERAGE))/ TIME/DATE/ORBIT/
19	D	LOG (E/64 average)/ TIME/DATE/ORBIT/
20	N	LOG (E/64 average)/ TIME/DATE/ORBIT/
24	---	LOG (P)/ TIME/DATE/ORBIT/
25	---	LOG (E)/ TIME/DATE/ORBIT/
26	---	LOG (E/64) /TIME/DATE/ORBIT/
27	D	P/F/B ₁ /L ₁ /B ₂ /L ₂ /B ₃ /L ₃ /B ₄ /L ₄ /B ₅ /L ₅ / DATE/ORBIT
28	N	P/F " " " " " " " " " " " " " "
29	D	E/F " " " " " " " " " " " " " "
30	N	E/F " " " " " " " " " " " " " "
31	D	E/64)/F " " " " " " " " " " " " " "
32	N	E/64)/F " " " " " " " " " " " " " "
48	---	Universal start time/ DATE /Universal stop time/ DATE/ORBIT/

The 5 pairs of B-L coordinates on a given card (B₁, L₁/ B₂, L₂/ B₃, L₃/ B₄, L₄/ B₅, L₅/) are values obtained during this orbit during which the counting rate fell in the range of the family number cited on that card.

The orbital card images have been internally sorted such that the relative Universal times are chronological.

TABLE II

COUNT RATE LIMITS

FAMILY
NOS.

1.	0-1.73
2.	1.73-5.65
3.	5.65-17.3
4.	17.3-56.5
5.	56.5-173
6.	173-565
7.	565-1730
8.	1730-5650
9.	5650-17,300
10.	17,300-56,500
11.	Greater than 56,500

TABLE III

TAPE
NOS.

ORBIT NUMBERS

1.	1-271
2.	271-563
3.	563-882
4.	882-1039

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TABLE IV

3	10	13	14	15	16	17	25	32	34	36	37	38	39
40	47	50	54	69	83	97	98	110	113	116	127	142	157
171	172	182	186	200	201	209	211	216	221	223	231	237	244
245	246	252	260	274	275	319	320	321	333	334	335	336	337
338	349	357	360	363	372	374	375	376	377	378	380	381	382
383	387	391	392	393	407	422	427	428	436	437	438	439	451
454	465	466	481	482	483	496	504	507	510	511	512	513	521
522	523	524	525	539	540	541	542	554	555	556	557	562	569
570	571	572	584	597	599	605	607	608	609	610	611	612	613
614	628	629	630	631	632	633	634	635	636	637	638	639	640
641	643	644	645	657	658	659	660	672	679	687	698	700	701
702	703	731	732	733	734	735	736	737	738	739	740	741	742
743	744	745	746	747	748	749	750	760	763	770	776	777	778
782	789	790	791	799	805	806	820	826	829	835	840	841	842
846	847	848	849	850	851	852	860	861	864	879	890	891	892
893	900	902	908	923	937	944	952	966	967	982	984	985	986
1000	1111	1026	1038	289	304	616	716	996					

S-16 MISSING ORBITS ←